

## General

### Title

End stage renal disease (ESRD): percentage of all patient months for adult patients ( $\geq 18$ ) whose delivered peritoneal dialysis dose was a weekly Kt/Vurea  $\geq 1.7$  (dialytic + residual).

### Source(s)

Centers for Medicare & Medicaid Services (CMS). Measure information form: delivered dose of peritoneal dialysis above minimum. Baltimore (MD): Centers for Medicare & Medicaid Services (CMS); 2015 Sep 25. 5 p.

Centers for Medicare & Medicaid Services (CMS). Measure justification form: delivered dose of peritoneal dialysis above minimum. Baltimore (MD): Centers for Medicare & Medicaid Services (CMS); 2015 Sep 25. 21 p.

## Measure Domain

### Primary Measure Domain

Clinical Quality Measures: Outcome

### Secondary Measure Domain

Does not apply to this measure

## Brief Abstract

### Description

This measure is used to assess the percentage of all patient months for adult patients (greater than or equal to 18) whose delivered peritoneal dialysis dose was a weekly Kt/Vurea greater than or equal to 1.7 (dialytic + residual).

### Rationale

Evaluation of peritoneal dialysis (PD) adequacy every four months for adults is critical to ensure timely dose adjustment as needed, and adequate dialysis doses (Kt/Vurea greater than 1.7 for adult patients and Kt/Vurea greater than 1.8 for pediatric patients) have been linked to improved patient outcomes.

Therefore, continued implementation of this measure is needed to ensure frequent adequacy measurement and adequate dialysis dosing.

Studies have shown a Kt/V of 1.8/week or greater in adult PD patients was associated with better serum albumin levels (Paniagua et al., 2002) and improved survival (Lo et al., 2005). The ADEMEX did not show clinical benefit with in weekly Kt/V doses exceeding 1.7/week in adult continuous ambulatory peritoneal dialysis (CAPD) patients (Paniagua et al., 2002).

## Evidence for Rationale

Centers for Medicare & Medicaid Services (CMS). Measure justification form: delivered dose of peritoneal dialysis above minimum. Baltimore (MD): Centers for Medicare & Medicaid Services (CMS); 2015 Sep 25. 21 p.

Lo WK, Lui SL, Chan TM, Li FK, Lam MF, Tse KC, Tang SC, Choy CB, Lai KN. Minimal and optimal peritoneal Kt/V targets: results of an anuric peritoneal dialysis patient's survival analysis. *Kidney Int.* 2005 May;67(5):2032-8.

Paniagua R, Amato D, Vonesh E, Correa-Rotter R, Ramos A, Moran J, Mujais S, Mexican Nephrology Collaborative Study Group. Effects of increased peritoneal clearances on mortality rates in peritoneal dialysis: ADEMEX, a prospective, randomized, controlled trial. *J Am Soc Nephrol.* 2002 May;13(5):1307-20.

## Primary Health Components

End stage renal disease (ESRD); peritoneal dialysis; Kt/Vurea dose

## Denominator Description

To be included in the denominator for a particular reporting month, the patient must be on peritoneal dialysis for the entire month, be greater than or equal to 18 years old at the beginning of the month, must have had end-stage renal disease (ESRD) for greater than 90 days at the beginning of the month, and must be assigned to that facility for the entire month.

See the related "Denominator Inclusions/Exclusions" field.

## Numerator Description

Number of patient months in the denominator whose delivered peritoneal dialysis was a weekly Kt/Vurea greater than or equal to 1.7 (dialytic + residual, measured in the last 4 months) (see the related "Numerator Inclusions/Exclusions" field)

## Evidence Supporting the Measure

### Type of Evidence Supporting the Criterion of Quality for the Measure

A clinical practice guideline or other peer-reviewed synthesis of the clinical research evidence

One or more research studies published in a National Library of Medicine (NLM) indexed, peer-reviewed journal

# Additional Information Supporting Need for the Measure

## High Priority

On December 31, 2012, nearly 402,514 end-stage renal disease (ESRD) patients were receiving hemodialysis therapy, 40,605 were being treated with peritoneal dialysis (United States Renal Data System, 2014). Kidney Disease Outcomes Quality Initiative (KDOQI) (National Kidney Foundation, 2006) and European guidelines (Dombros et al., 2005) have set minimum standards for periodic assessment of peritoneal dialysis adequacy (Lo et al., 2006). Both peritoneal clearance and residual renal function (RRF) need to be assessed. Both guidelines and studies have emphasized the importance of total clearance.

## Evidence for Additional Information Supporting Need for the Measure

Centers for Medicare & Medicaid Services (CMS). Measure information form: delivered dose of peritoneal dialysis above minimum. Baltimore (MD): Centers for Medicare & Medicaid Services (CMS); 2015 Sep 25. 5 p.

Dombros N, Dratwa M, Feriani M, Gokal R, Heimbürger O, Krediet R, Plum J, Rodrigues A, Selgas R, Struijk D, Verger C, EBPG Expert Group on Peritoneal Dialysis. European best practice guidelines for peritoneal dialysis. Adequacy of peritoneal dialysis. *Nephrol Dial Transplant*. 2005 Dec;20 Suppl 9:ix24-ix27. [26 references] [PubMed](#)

Lo WK, Bargman JM, Burkart J, Krediet RT, Pollock C, Kawanishi H, Blake PG, ISPD Adequacy of Peritoneal Dialysis Working Group. Guideline on targets for solute and fluid removal in adult patients on chronic peritoneal dialysis. *Perit Dial Int*. 2006 Sep-Oct;26(5):520-2. [15 references] [PubMed](#)

National Kidney Foundation. KDOQI clinical practice guidelines and clinical practice recommendations for 2006 updates: hemodialysis adequacy, peritoneal dialysis adequacy and vascular access. *Am J Kidney Dis*. 2006 Jul;48(Suppl 1):S1-322.

United States Renal Data System. 2014 USRDS annual data report: epidemiology of kidney disease in the United States. Bethesda (MD): National Institutes of Health, National Institute of Diabetes and Digestive and Kidney Diseases; 2014. various p.

## Extent of Measure Testing

### Reliability Testing

#### *Method of Reliability Testing*

The developer used January 2013 – December 2013 Claims data to calculate the inter-unit reliability (IUR) for the overall 12 months to assess the reliability of this measure. The National Quality Forum (NQF)-recommended approach for determining measure reliability is a one-way analysis of variance (ANOVA), in which the between and within facility variation in the measure is determined. The IUR measures the proportion of the measure variability that is attributable to the between-facility variance. The yearly based IUR was estimated using a bootstrap approach, which uses a resampling scheme to estimate the within facility variation that cannot be directly estimated by ANOVA. The developer notes that the method for calculating the IUR was developed for measures that are approximately normally distributed across facilities. Since this measure is not normally distributed, the IUR value should be interpreted with some caution.

#### *Statistical Results from Reliability Testing*

For reliability the developer calculated the monthly and annual IUR across the 12 reporting months. As explained above, the method for calculating the IUR was developed for measures that are approximately normally distributed across facilities. IUR=0.910, which is high and suggests 91% of variation in the

measure is attributed to between facility variation. The confidence interval is (0.904, 0.917).

#### *Interpretation*

The IUR suggests this measure is reliable. However, since the distribution of performance scores is skewed, the IUR value should be interpreted with some caution.

#### Validity Testing

##### *Method of Validity Testing*

Validity was assessed by calculating the Spearman correlation between this measure and the 2013 standardized mortality ratio (SMR) (NQF 0369) and standardized hospitalization ratio (SHR) (NQF 1463).

This measure is also being maintained on the basis of face validity. Use of small solute clearance (urea reduction ratio and more recently Kt/V) as a dialysis quality measure was initially developed and approved by clinical technical expert panels (TEPs) in 2006, 2010 (for pediatric hemodialysis [HD] and peritoneal dialysis [PD] adequacy), and 2013 which all agreed that this quality measure domain will improve is important in the assessment of the quality of care for dialysis patients. Achieving target Kt/V was finalized for the End-stage Renal Disease (ESRD) Quality Incentive Program (QIP) beginning with program year (PY) 2015, and has been reported on Dialysis Facility Compare (DFC) since January 2013.

##### *Statistical Results from Validity Testing*

The Spearman correlation between this measure and the 2013 SMR as measured by the NQF-endorsed SMR (NQF 0369) for the same facility is -0.008 (p-value=0.7749). The Spearman correlation between this measure and the 2013 SHR as measured by the 2013 SHR (NQF 1463) is -0.139 (p-value less than 0.0001).

#### *Interpretation*

The Spearman correlation estimates indicate higher facility level percentages of patients at the facility that achieve the Kt/V target is associated lower standardized hospitalization, respectively, although the magnitude of the association is low. A very weak association between facility level percentages of patients achieving the Kt/V target and lower standardized mortality was observed and in the expected direction, however the correlation coefficient was not statistically significant.

Refer to the original measure documentation for additional information.

## Evidence for Extent of Measure Testing

Centers for Medicare & Medicaid Services (CMS). Measure justification form: delivered dose of peritoneal dialysis above minimum. Baltimore (MD): Centers for Medicare & Medicaid Services (CMS); 2015 Sep 25. 21 p.

## State of Use of the Measure

### State of Use

Current routine use

### Current Use

not defined yet

## Application of the Measure in its Current Use

## Measurement Setting

Ambulatory Procedure/Imaging Center

Hospital Outpatient

Managed Care Plans

## Professionals Involved in Delivery of Health Services

not defined yet

## Least Aggregated Level of Services Delivery Addressed

Single Health Care Delivery or Public Health Organizations

## Statement of Acceptable Minimum Sample Size

Does not apply to this measure

## Target Population Age

Age greater than or equal to 18 years

## Target Population Gender

Either male or female

## National Strategy for Quality Improvement in Health Care

### National Quality Strategy Aim

Better Care

### National Quality Strategy Priority

Prevention and Treatment of Leading Causes of Mortality

## Institute of Medicine (IOM) National Health Care Quality Report Categories

### IOM Care Need

Living with Illness

# IOM Domain

Effectiveness

## Data Collection for the Measure

### Case Finding Period

The measurement period

### Denominator Sampling Frame

Enrollees or beneficiaries

### Denominator (Index) Event or Characteristic

Clinical Condition

Patient/Individual (Consumer) Characteristic

Therapeutic Intervention

### Denominator Time Window

not defined yet

### Denominator Inclusions/Exclusions

#### Inclusions

To be included in the denominator for a particular reporting month, the patient must be on peritoneal dialysis for the entire month, be greater than or equal to 18 years old at the beginning of the month, must have had end-stage renal disease (ESRD) for greater than 90 days at the beginning of the month, and must be assigned to that facility for the entire month.

#### Note:

Patients with missing Kt/V values are not excluded from the measure. Therefore, patients for whom a Kt/V value is missing for the month are still included in the denominator. This is designed to ensure that facilities will still be evaluated for the measure. Refer to the original measure documentation for additional denominator details and calculation algorithm/measure logic.

#### Exclusions

Exclusions that are implicit in the denominator definition include:

- Patients not on peritoneal dialysis for the entire month
- Pediatric patients (less than 18 years old)
- All patients who have had ESRD for less than 91 days
- Patients not assigned to the facility for the entire month

### Exclusions/Exceptions

not defined yet

## Numerator Inclusions/Exclusions

### Inclusions

Number of patient months in the denominator whose delivered peritoneal dialysis was a weekly Kt/Vurea greater than or equal to 1.7 (dialytic + residual, measured in the last 4 months).

### Note:

Reporting months with weekly Kt/Vurea greater than or equal to 1.7 (dialytic + residual) are counted in the numerator. If no weekly Kt/Vurea value is reported for a given patient in the reporting month, the most recent peritoneal dialysis weekly Kt/Vurea value in the prior 3 months is applied to the calculation for that month.

Missing, expired, and not performed are not counted as achieving the minimum weekly Kt/Vurea threshold.

### Exclusions

Unspecified

## Numerator Search Strategy

Fixed time period or point in time

## Data Source

Administrative clinical data

Registry data

## Type of Health State

Physiologic Health State (Intermediate Outcome)

## Instruments Used and/or Associated with the Measure

Unspecified

## Computation of the Measure

## Measure Specifies Disaggregation

Does not apply to this measure

## Scoring

Rate/Proportion

## Interpretation of Score

Desired value is a higher score

## Allowance for Patient or Population Factors

not defined yet

## Standard of Comparison

not defined yet

## Identifying Information

### Original Title

Delivered dose of peritoneal dialysis above minimum.

### Measure Collection Name

End Stage Renal Disease (ESRD) Quality Measures

### Submitter

Centers for Medicare & Medicaid Services - Federal Government Agency [U.S.]

### Developer

Centers for Medicare & Medicaid Services - Federal Government Agency [U.S.]

### Funding Source(s)

Centers for Medicare & Medicaid Services (CMS)

## Composition of the Group that Developed the Measure

The University of Michigan Kidney and Epidemiology Cost Center (UM-KECC), develops, maintains, and updates the End Stage Renal Disease (ESRD) Quality Measures for the Centers for Medicare and Medicaid Services (CMS), under the Quality Measure Development and Maintenance contract with CMS. In addition, UM-KECC works with CMS's Measures Management System (MMS) in the development, evaluation, and reporting of the current ESRD Quality Measures.

## Financial Disclosures/Other Potential Conflicts of Interest

Unspecified

### Endorser

National Quality Forum - None

### NQF Number

not defined yet

### Date of Endorsement

2015 Oct 2

## Measure Initiative(s)

Dialysis Facility Compare (DFC)

## Adaptation

This measure was not adapted from another source.

## Date of Most Current Version in NQMC

2015 Sep

## Measure Maintenance

Annually

## Date of Next Anticipated Revision

Unspecified

## Measure Status

Please note: This measure has been updated. The National Quality Measures Clearinghouse is working to update this summary.

## Measure Availability

Source available from the [Dialysis Data Web site](#) .

For more information, refer to the [Dialysis Data Web site](#)  or contact Casey Parrotte at the Kidney Epidemiology and Cost Center, The University of Michigan, 1415 Washington Heights, Suite 3645 SPHI, Ann Arbor, MI 48109-2029; Phone: 734-763-6611; Fax: 734-763-4004; Email: [parrotte@med.umich.edu](mailto:parrotte@med.umich.edu).

## NQMC Status

This NQMC summary was completed by ECRI Institute on May 14, 2010. The information was verified by the measure developer on June 14, 2010. This NQMC summary was retrofitted into the new template on June 27, 2011.

This NQMC summary was updated by ECRI Institute on December 5, 2014. The information was verified by the measure developer on February 6, 2015.

This NQMC summary was updated again by ECRI Institute on July 14, 2016.

## Copyright Statement

No copyright restrictions apply.

# Production

## Source(s)

Centers for Medicare & Medicaid Services (CMS). Measure information form: delivered dose of peritoneal dialysis above minimum. Baltimore (MD): Centers for Medicare & Medicaid Services (CMS); 2015 Sep 25. 5 p.

Centers for Medicare & Medicaid Services (CMS). Measure justification form: delivered dose of peritoneal dialysis above minimum. Baltimore (MD): Centers for Medicare & Medicaid Services (CMS); 2015 Sep 25. 21 p.

## Disclaimer

### NQMC Disclaimer

The National Quality Measures Clearinghouse<sup>®</sup> (NQMC) does not develop, produce, approve, or endorse the measures represented on this site.

All measures summarized by NQMC and hosted on our site are produced under the auspices of medical specialty societies, relevant professional associations, public and private organizations, other government agencies, health care organizations or plans, individuals, and similar entities.

Measures represented on the NQMC Web site are submitted by measure developers, and are screened solely to determine that they meet the [NQMC Inclusion Criteria](#).

NQMC, AHRQ, and its contractor ECRI Institute make no warranties concerning the content or its reliability and/or validity of the quality measures and related materials represented on this site. Moreover, the views and opinions of developers or authors of measures represented on this site do not necessarily state or reflect those of NQMC, AHRQ, or its contractor, ECRI Institute, and inclusion or hosting of measures in NQMC may not be used for advertising or commercial endorsement purposes.

Readers with questions regarding measure content are directed to contact the measure developer.